Tools for Educational Change

The computer lab at Francisco Manyanga Secondary School in Maputo is open 11 hours a day to keep pace with student demand. (IDRC Photo: Peter Bennett)

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Palmiro Pinto has a daunting job. As the principal of Francisco Manyanga Secondary School in Maputo, Mozambique, she is responsible for the 7000 students, 210 teachers, and 64 support staff who walk through the front doors of her institution daily. The key to the smooth running of an institution this size, says Pinto, "is to put the right people in place, have a plan and the resources to go with it."

This straightforward, modest assessment belies the challenges educators like Pinto face. At this time in Mozambique's history, resources, both human and financial, are scarce. The national government has made education a priority, but so too is health care, human resource development, agriculture, and governance. Given competing priorities and scant resources, decision-makers at all levels are looking for ways to stretch the education dollar. One of the avenues they are exploring is the use of information and communication technologies (ICTs) in the country's schools and teacher training centres.

New economy, new skills

One floor above Pinto's office is a relatively new computer lab, part of SchoolNet Mozambique, a project supported by Canada's International Development Research Centre (IDRC) to link schools via the Internet to enhance learning opportunities for students, teachers, and the surrounding community. The lab is open from 7:00 a.m. to 8:00 p.m. It runs flat out and still can't meet demand.

"This kind of technical training is necessary today, because students need more than just conceptual notions," say Pinto.

Her assertion echoes the government's concerns. Mozambique's public service and private sector are modernizing. They will need skilled, technologically literate workers. Right now, most students entering university have never used a computer. Indeed, Mozambique's universities and technical schools produce 30 to 40 ICT graduates a year, not enough in a country whose stated goal is to become "an active and competitive partner in the Global Information Society and world economy."

SchoolNet is seen as an important first step in introducing ICTs, especially computers, to Mozambique’s "first generation " of information workers.

SchoolNet phase II

During its pilot phase, SchoolNet targeted secondary schools, technical institutes, and teacher training centres — 10 sites in all. Despite positive results, SchoolNet was floundering when its current coordinator, Kauxique Maganlal of Mozambique’s Ministry of Education, assumed the reins.

"Many of the computers donated were 486 Megahertz machines that had been refurbished but not maintained for more than a year," says Maganlal. Curriculum development had also suffered from the lack of a full time coordinator. Fortunately for Maganlal, his arrival coincided with the release of Mozambique’s ICT policy and renewed interest in extending ICT use to schools across the country. Even the private sector was looking for ways to help. Maganlal quickly translated this goodwill into 200 state-of-the-art computers and 25 free Internet connections to schools in Maputo, Mozambique’s capital. By the end of 2005, he hopes to have 200 schools in his network.

There are high hopes that SchoolNet will help level the playing field by providing rural dwellers and urban centres outside the country’s capital with equitable access to educational materials and resources. To broaden the reach of SchoolNet throughout the country, technological options, such as packet radio, satellite, and wireless communication systems, will be explored.

Content needed

If one school could serve as a model of the benefits that can accrue from access to ICTs, it would be Emilia Daússe Secondary School in the city of Inhambane, some 600 kilometres from Maputo. In addition to being part of SchoolNet, it is also home to the Projecto Evolução Pela Comunicação e Informática (EPCI), a community telecentre. Students and teachers use the facility for free, while walk-in users pay for services, such as email and access to the Internet. The students and teachers have developed micro projects such as designing Web sites and recycling and repairing computers. Not only do the projects develop ICT skills, they also bring in money. As a result, the telecentre is well on its way to sustainability.

The success of EPCI has not gone unnoticed. In its plan to translate Mozambique's ICT policy into action, the government called for the creation of Provincial Digital Resource Centres (PDRCs) to act as "hubs" for ICT activities in each of the country's 10 provinces. EPCI served as the model for this scheme and now receives funding as one of the country's first PDRCs.

According to Maganlal, the Ministry of Education is looking for ways to replicate these revenue-generating micro projects in other schools to try to subsidize infrastructure and telecommunication costs while offering hands-on experience to high school students.

Beyond the lack of infrastructure, however, Mozambique also faces a shortage of appropriate content. Right now it is able to meet some of the needs through exchanges with other Portuguese-speaking countries, notably Brazil and Portugal. Mozambique, however, is a kaleidoscope of indigenous languages, few of which are found on the Internet. To provide relevant content to its citizens, "Mozambique must become a producer not just a consumer of content," says Maganlal.

Tool for change

Despite language barriers, students and teachers in the SchoolNet network are using the Internet as a learning tool. Mozambican students have participated in Internet-based exchanges such as the Global Environment Youth Convention and the Math Olympics.

Some, like Afrosio Sadie, have now become content developers. A graduate of Francisco Manyanga school, he was among the first hand-picked group of students to receive computer training in the school's new computer lab. Among the skills he was taught was Web design. Sadie put his talents to the test in a national competition to create African content for the World Wide Web. The contest was sponsored by the Regional Informatics Network for Africa (RINAF) and UNESCO. Sadie's second place finish won him a bicycle and recognition. The Informatics Centre of the University Eduardo Mondlane (CIUEM) asked him to help with the design of one of its Web sites. He is a willing volunteer as he waits to see if he will be admitted to the university this time around. In his first attempt, Sadie was among the 2000 or so students who applied for admission to the science faculty to study biology. Unfortunately, he was not among the 70 admitted. Now he is looking at other options.

"I wouldn't mind working in biology," says the twenty-year-old, "but I also like computers and graphic arts. Maybe a combination of the two would be best!"

It is these kinds of opportunities for learning that can open new doors to African students says Shafika Isaacs, the Executive Director of SchoolNet Africa, the African nongovernmental organization that is the umbrella group for country-based SchoolNet programs, such as the one in Mozambique.

Isaacs sees ICTs as much more than simply a means to address pressing problems in education across Africa. "They're an opportunity to catalyze systemic change," she says. That includes a shift away from traditional teaching models where the teacher is the purveyor of knowledge — the "sage on the stage" model — to one where teachers play a facilitators role — "the guide on the side." Giving students the ability to control their own learning could allow Africa to more quickly harness its latent human potential.

Maganlal also sees his role as one of "providing opportunities for students" — opportunities that did not exist when he was a student. His goal is to have a school in Mozambique emerge as a SchoolNet champion in Africa. Maybe he is thinking of his old alma mater, Francisco Manyanga.

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